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ABSTRACT

A study was conducted to determine Liberty Baptist College's impact on the Lynchburg area in the 1980 fiscal year. Three impact areas were studied: local businesses, governments, and individuals. Local construction expenditures of $5.6 million, additional college-related expenditures of other affiliated organizations, and several other peripheral categories of influence were excluded. Findings revealed: local business volume stimulated by college-related expenditures was $24,297,643; $13,413,529 worth of business property was committed to college-related business; due to college-related deposits of the college, employees, and students, local banks' credit base was expanded by $1,603,827; $706,459 in local business volume was unrealized due to the college bookstore's operation; $1,040,457 were received by local governments due to the college's existence, excluding college-related revenues from several sources; local governments spent $1,489,710 for services allocable to college-related influences; $866,184 of local government properties were allocable to a college-related portion of services; $71,000 in real estate taxes were lost by local governments due to the college's tax-exempt status; 1,586 jobs were attributable to the college's presence; $14,712,214 in local individuals' income was due to college-related activities; and $441,366 in durable goods was procured with income from college-related jobs and business activities. (Author/MSE)

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AN ECONOMIC IMPACT STUDY OF LIBERTY BAPTIST COLLEGE ON THE LYNCHBURG METROPOLITAN AREA

A Study

Presented To

The President and Board of Trustees

of Liberty Baptist College

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by

Leonard J. Moisan

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PREFACE

Conducting such a study would have been impossible without the cooperative efforts of many people. While several contributed to its completion, some were particularly helpful in providing the necessary data.

Internally, the support of our president, Dr. A. Pierre Guillermin and the cooperation of the faculty and staff and particularly, the business offices under the direction of Mr. Bill Paul, helped make the process of compiling the enormous amount of data necessary for the completion of this study an easier one.

Also, the cooperation of several local, state, and federal government offices added to the success of the study. The local school boards, the local Commissioners of Revenue, the Virginia Auditor of Public Accounts, the Virginia Departments of Education and Taxation, and the U.S. Bureau of the Census were all extremely helpful in providing necessary data.

Likewise, in the business sector, the local Chamber of Commerce, under the direction of Mr. Art Middleton and with the help of Mrs. Gladys Martin was extremely cooperative in providing vital data on business patterns in the Lynchburg Metropolitan Area.

Finally, this study would not have been possible without the help of Dr. Earl S. Mills, Director of Institutional Research at Liberty Baptist College. His guidance, support, wisdom, and professional expertise were invaluable in helping with the completion of this study and provided a constant source of encouragement from the beginning of this project to its completion.

Abstract

A study was conducted to determine the impact of the Liberty Baptist College on the Lynchburg Metropolitan Area in the 1980 fiscal year. Employing the model developed by John Caffrey and Herbert Isaacs for the American Council on Education, the study investigated three specific areas of impact: impacts on local businesses, governments, and individuals. In the study local construction expenditures of $5.6 million as well as additional college-related expenditures of other affiliated organizations (Lynchburg Christian Academy, Thomas Road Baptist Church, and Old-Time Gospel Hour) were not included. Also not included were revenues received by local governments from real estate taxes paid for rental properties occupied by college faculty, staff, and students; personal property taxes paid to local governments by students; and the portion of payments to local governments by businesses (other than real estate taxes) and individuals from income allocable to college-related business activity.

The findings revealed:

(1). The local business volume stimulated by college-related expenditures was $24,297,643

(2). $13,413,529 worth of business property was committed to college-related business

(3). Due to college-related deposits of the college, its employees, and its students, the local banks' credit base was expanded by $1,603,827

(4). $706,459 in local business volume was unrealized, due essentially to the operation of the Liberty Baptist College bookstore

(5). $1,040,457 in revenues were received by local governments due to the existence of the college. This does not include additional college-related revenues received by local governments from several sources. Such revenues as the portion of payments to local governments by businesses and individuals from income allocable to college-related business activity (and others) did exist but could not be accurately calculated and therefore, were not included.

(6). $1,489,710 was expended by local governments for services allocable to college-related influences

(7). $866,184 of local government properties were allocable to college-related portion of services

(8). $71,000 in real estate taxes were lost by local governments due to the tax-exempt status of the college

(9). 1,586 jobs were attributable to the presence of the college

(10). $14,712,214 in income of local individuals was due to college-related jobs and business activities

(11). $441,366 in durable goods were procurred with income from college-related jobs and business activities

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Chapter 1

INTRODUCTION

Declining enrollments, inflation, societal pressures and the Reagan administration's budget reductions have put increased pressure on the private sector of higher education and made the survival of many private, liberal arts colleges increasingly more questionable. As a result these institutions have been forced to turn, more often, to the private sector for increased support. Salamon and Abramson (1981)stated that 144 percent increase in private giving to non-profit organizations will be needed from 1980 through 1984 just to offset the Reagan administration's budget cuts.

Liberty Baptist College is no exception to this. Federal budget cuts have reduced aid to students some $430,000 over last year, notwithstanding an 11 percent increase in student enrollment and modifications to the Guaranteed Student Loan program which would raise the amount cut to over $600,000. This condition cannot be sustained for any long period of time without affecting a serious decline in enrollment which would eventually cause a depletion in the number of human resources the college is able to train for service in the community.

While training those human resources is the most important contribution the college makes to the community and has the greatest impact, there are also collateral contributions the college makes to the financial well being of the Lynchburg Metropolitan Area (LMA). Beginning with a student body of 141 students in 1971, the college has expanded to a

current enrollment of 3,347 students. In the 1980-81 fiscal year, the college had 356 full time employees with approximately $6 million being expended on salaries and wages and 18.7 million in total budgeted expenditures. Also, in the 1980-81 fiscal year, an additional $5.6 million was expended on buildings for the college.

General Purpose of the Study

The question, "What is the impact of Liberty Baptist College on the economy of the Lynchburg Metropolitan Area?", was addressed in this study. It is important for the college and the community to be supportive of one another and to maintain a solid working relationship. Given the present economic climate, funding for higher education is at a critical stage. Many small colleges are struggling for survival. Cook (1970) suggested that colleges should be able to express their community contributions more clearly in some common denominator. The reason for conducting an economic impact study should be to help foster a better relationship between the community and the college by providing a more realistic understanding of how each benefits the other (Owings, 1980).

The purpose of this study was to measure the impact of Liberty Baptist College on the Lynchburg Metropolitan Area economy. The investigation explored impacts on local businesses, local governments and local individuals, and enabled the college to gain a better understanding of both the positive and negative impacts it is having on the community. These results will be communicated to the community and used as a basis for effecting increased understanding and community support of the college. Such findings should

serve as a catalyst for continuous and improved dialogue between Liberty Baptist College and the community, producing more effective planning for both Liberty Baptist College and the Lynchburg Metropolitan Area.

The Statement of the Problem

The purpose of this study was to investigate the extent of the impact that Liberty Baptist College (LBC) had on the economy of the Lynchburg Metropolitan Area (LMA).

The Subproblems

The first subproblem. The first subproblem was to determine the economic impact LBC had on local business.

The second subproblem. The second subproblem was to determine the economic impact LBC had on local government.

The third subproblem. The third subproblem was to determine the economic impact LBC had on local individuals.

The fourth subproblem. The fourth subproblem was to analyze and interpret the data in order to evaluate the overall impact LBC had on the LMA.

The Limitations

Socio-Economic Impact

The study did not investigate the socio-economic impact of Liberty Baptist College (LBC) on the Lynchburg Metropolitan Area (LMA).

Economic Impact Outside the Lynchburg Metropolitan Area

The study did not investigate the economic impact of LBC outside the LMA.

Educational, Social and Cultural Impacts

The study did not investigate the educational, social, and cultural impacts LBC has on the LMA.

Liberty Baptist College-Related Construction

The study did not investigate the economic impact of LBC-related construction on the LMA. In 1980-81 that construction totalled $5.6 million.

Economic Impact of Other College-Related Ministries

The study did not investigate the economic impact of other college-related ministries such as the Thomas Road Baptist Church and the Old Time Gospel Hour on the LMA.

The Definition of General Terms

For the purpose of clarity, terms used in this study are defined as follows:

Economy refers to a system of producing, distributing, and consuming wealth.

Lynchburg Metropolitan Area refers to the city of Lynchburg and surrounding counties including Amherst, Campbell, Bedford, and Appomattox.

Expenditures refer to monies spent by each of the subgroups in the LMA.

Private Sector refers to non-government (city, state, or federal).

Economic Impact refers to the direct and indirect effects the operation of Liberty Baptist College has on the Lynchburg Metropolitan Area system of producing, distributing, and consuming wealth.

Model refers to an ordered statement of relationships among variables.

Proportion refers to a decimal equivalent of a fraction; hence, 0.8 = 8/10 or 4/5, or eight out of ten or four out of five.

Percentage refers to a proportion multiplied by 100, hence 8/10 or 4/5 = 80 percent.

Local refers to the Lynchburg Metropolitan Area (LMA)

Socio-Economic refers to impacts involving both social and economic factors. For example, graduates are generally able to attain higher social social status and higher salaries as a result of their education. This brings more money into the community.

Living Patterns refer to patterns of income and expenses of individuals within the community.

Assumptions

The following assumptions underlaid this study:

The first assumption. The first assumption was that the model used (an adjusted version of the one recommended by the American Council on Education) adequately measured the economic impact of Liberty Baptist College on the Lynchburg Metropolitan Area.

The second assumption. The second assumption was that having a positive economic impact on the Lynchburg Metropolitan Area would be of importance to both the community and to Liberty Baptist College.

The third assumption. The third assumption was that the college records used in this study were an accurate reflection of the Liberty Baptist College's business activity for the 1980-81 school year.

The fourth assumption. The fourth assumption was that Liberty Baptist College transactions for the 1980-81 fiscal year were fairly representative of those in other fiscal years.

The fifth assumption. The fifth assumption was that the patterns of living of the Liberty Baptist College faculty and staff (i.e., whether they rent or own houses) were generally the same as that of all residents of the Lynchburg Metropolitan Area.

The sixth assumption. The sixth assumption was that the community records used were an accurate reflection of the business activity for 1980-81 in the Lynchburg Metropolitan Area.

The seventh assumption. The seventh assumption was that the spending patterns of the 1981-82 student body were similar to those of the 1980-81 student body.

Chapter II

THE REVIEW OF THE RELATED LITERATURE

Overview

A review of existing literature indicated clearly that higher educational institutions do have a significant impact on their communities both socially and economically (Bess, 1980; Owings, 1980; Butler, 1980; Mahon, 1979; May and Hauck, 1981; and others). However, as Cook (1970, p. 146) has stated, "efforts to translate this impact into units of measure common to the community have been sporadic and disjointed." As the economy becomes tighter and enrollments decline further, colleges are literally going to be fighting for their existence. Increasingly they are going to have to turn to their respective communities for support and consequently, will need to provide rationale for that support. Cook further emphasized this point by saying that there are many in the community who see colleges as unqualified burdens which take much in service and return little in taxes. He suggested that since funding of higher education is at such a critical stage, these institutions should be able to express their community contributions more clearly in some common denominator.

While Cook's points are well taken, his suggestion that a somewhat adversary relationship exists between the school and community would seem to have been more prevalent in 1970 than today. Nevertheless, it is important for colleges to study their impact on the local community and convey to the community the results. As Owings, (p. 5) stated, "The underlying reason for conducting a community impact study should be to help foster a

better relationship between the community and the college by a more realistic understanding of how each benefits the other." The community needs to be educated to the fact that the college is a consumer of goods and services much like that of a large corporation, and their business activity has many effects on the local economy.

The economic impact of colleges can be viewed in either long-range or short-range terms. According to Selgas (1973) long-range terms examine the economic worth of individuals and short-range terms examine the immediate effects of institutional-related expenditures on the economy of a given area.

It is important to keep in mind however, that these studies tend to be limited. As Caffrey and Isaacs (1971, p. 4) explained the economic impact analysis is actually a "series of linear cash-flow formulas which include only what can be readily counted...The models impose an arbitrary structure on cash outflow to identify who is spending, how much they are spending, what goods and services they are buying, and where the spending is being done...They do not show political, social, or aesthetic impacts or the effects upon the community of the colleges' human resources. They do measure dollar outlay and provide simple indicators for planning."

This study closely examined the short-range effects Liberty Baptist College had on the Lynchburg Metropolitan Area economy. More specifically, it investigated the effects on local business, local government, and local individuals. The above structure for investigation of impacts on the local economy was suggested by Caffrey and Isaacs and was adapted and employed in a high percentage of the studies reviewed (Breslin, 1979; Jaecock, 1977; Simpson, 1976; Owings, 1980; Butler, 1980; Lange, 1980).

It is also the model recommended by the American Council on Education. Some slight criticism of this model was offered by Palmer (1978) who stated that Caffrey and Isaacs model did not completely measure the impact the University of Pittsburgh had on the local economy. She suggested that some adjustments to the model be made, using the uniqueness of each institution and its community as the basis for her suggestion. However, virtually all studies reviewed have made such adjustments. A more specific review of existing literature and findings with respect to each of three areas (impact on local business, impact on local government, impact on local individuals) is listed below.

Impact On Local Business

One item which must be considered in measuring impact on local business is the multiplier effect. Butler described this as the theory that expenditures in an economy result in additional income for other individuals. This creates additional spending which generates more income. The purpose of the multiplier is to give an estimate of the final impact of expenditures (Linthicum, 1978). Also, that multiplier will vary from one community to the next. The smaller and less independent a community is, the more expenditures will leak outside the local economy which will require a smaller multiplier. For example, in his study of Thomas Nelson Community College, Butler applied a conservative multiplier of 1.3 to college-related local expenditures of $1,735,045., calculating an impact on the business volume of $2,225,559. Selgas, on the other hand, in a study of the Harrisburg Area Community College impact on the community, applied a higher multiplier of 1.45 to $4,039,431, calculating an impact

of $5,857,175, while Poris (1978), applied a multiplier of 1.9 to total expenditures of $14,009,128, calculating a total impact of $26,788,343.

Many variables will affect the multiplier and therefore, it will differ from one institution and community to another. Caffrey and Isaacs suggested, as a general rule, using a multiplier of 1.9, assuming a region is relatively self-sufficient. Several factors will affect the multiplier (Bish and Brown, 1977). Among these are:

1. Georgraphic size of the area
2. Size of the facility work force
3. Current growth
4. Forward and backward linkages to industry
5. Diversity in local economic activity
6. Payroll leakages
7. Underemployment
8. Excess business capacity
9. Unfilled vacated jobs
10. Increased participation in the labor force
11. Underemployment

Whatever the factors are affecting the multiplier, it is important to recognize that expenditures do have a multiplied effect on business activity in a community, and that effect must be considered when attempting to quantify an institution's overall economic impact on that community's business activity. The Caffrey and Isaacs method for calculating the college-related local business volume (Model B-1) was used in many studies (Simpson, 1975; Poris, 1978; Breslin, 1979; Lange, 1980; Jeacock, 1977; Manning, 1975; Moore, 1975; Linthicum, 1978; May and Hauck, 1981). It was calculated by adding the total college-related local expenditures, the purchases from local sources by local business in support of college-related volume, and the local business volume stimulated by the expenditures of college-related income by local individuals other than faculty, staff and students. In the process of arriving at the above

figures, certain coefficients or multipliers were applied in the calculation of each element.

One different model reviewed was the use of an econometric model to measure the impact of Louisiana State University on the Louisiana economy. Engler, Firnberg, and Kuhn (1980) applied a multiplier of 1.68 to total university salary and wage expenditures. They computed a total of $330 million created by the university in wages and salaries. Similarly, they applied a multiplier of 1.88 to total plant expenditures, calculating an additional $93.6 million, which added to the salary and wage impact, gave a total impact of $423,946,085 on the Louisiana economy. The econometric model differs from the economic base-type model of Caffrey and Isaacs basically in the way data is collected and analyzed. It can be argued that the econometric model is less costly because it requires no survey of faculty, staff, and student spending and relies on equations calculated basically from internal or public records.

While this point is well taken, the model used essentially depends on institutional needs and researcher preference. For example, one item which Engler, Firnberg, and Kuhn did not consider was the valuable contact and multiple uses to which data collected through these surveys can be applied.

Two other areas which were considered by Caffrey and Isaacs in figuring overall impact on business were the value of the area business property committed to university or college-related local business, and the expansion of the area bank's credit base resulting from university-related deposits. These were not addressed in the econometric model (Fishkind, Milliman and Ellson, 1978; Engler, Firnberg, Kuhn, 1980), and are important in

accomplishing the underlying reason for conducting a community impact study: helping foster better relationships between the community and the college by presenting a more realistic understanding of how each benefits the other.

Using the Caffrey and Isaacs model, May and Hauck found the value of the area business property committed to university-related business to be $472,324,000 and the expansion of the bank's credit base resulting from university-related deposits to be $46,535,000 as a result of the activity generated due to the University of Virginia's existence.

Similarly, in a study of the economic impact of Saint Cloud State University on the local economy, Lange found that the value of the area business property committed to the university-related business was $33,209,870 and the expansion of the area banks' credit base resulting from university-related deposits was $6,511,247.

While Simpson did not calculate the value of the area business property committed to university-related business because of lack of records, he calculated the expansion of the area banks' credit base resulting from university-related deposits to be $455,605 in a study of the impact of Elizabeth City State University on the local economy.

Finally, when attempting to quantify the impact of college or university spending on business, one cannot present figures without categorizing and providing a basis and explanation for those figures. The better the explanation the more meaning the figures have to each sector of the business community impacted. One must remember that conducting the study is of no use unless the results can be clearly and adequately communicated. Not only must this communication take place inside the institution,

but people outside the institution in the local community must be made aware of the results as well.

Impact on Local Government

In studying the impact on local government, it was important to realize that the results in this section only included those which can be quantified. The college provides many services to citizens which cannot be figured in dollar amounts. Such activities as cultural events, educational programs and recreational activities are positive impacts not considered in this section (Lange, 1980).

The investigation of impact on local government under the Caffrey and Isaacs model generally considered five areas: college or university-related revenues received by the city and college, operating costs of city and county-provided services and public schools allocable to college-related influences, value of city and county properties allocable to college-related portion of services provided, real estate taxes foregone through tax exempt status of the college, and the value of municipal-type services provided by the college (such as police, security, and sanitation). As previously stated by Owings, one of the purposes of conducting an economic impact study is to give a better understanding of how the college and community mutually benefit each other. The community benefits the college receives, in part, are investigated in the operating costs of city and county-provided services and public schools allocable to college-related influences, city and county property values, and real estate taxes foregone through tax exempt status of the college. For example, Bess found that positive economic impacts on local government were not as significant as those on local business. This is mainly due to the fact that, as he says, "College-related positions create

liabilities by requiring governmental services, as well as paying taxes to support these services" (Bess, 1980, p. 15). The total revenues received by local government for all six schools were $6,954,000 while the total operating costs for services provided by these local governments were $5,104,000 for a slight positive impact, not withstanding lost tax revenues to local government and school property existing in support of services provided for the college and its employees.

Conversely, May and Hauck found a much larger difference between the revenues generated to local government and the cost of services provided by them. They found that the university generated $24,252,000 in revenues to local government, while requiring only $15,722,000 in services. Also, the University of Virginia provided some $550,000 in municipal-type services, while the local government lost only $63,000 in real estate taxes due to the university's tax exempt status. However, May and Hauck were very careful in presenting each of these impacts independent of the others. This is important to the interpretation of the data because seemingly positive impacts whould be negated if one attempted to aggregate all of the government models to find an overall positive or negative impact. For example, the value of government properties allocable to college-related portion of services is usually much higher than the amount of revenues generated. In the University of Virginia study the value of such properties amounted to $45,499,000 which was almost twice the amount of revenues generated. Yet presenting the value of these properties must also be considered in light of the fact that it could cost the college considerably less if they had to provide such properties themselves on a yearly basis, taking into account such cost effective measures as long term mortgages,

land depreciation and possible lease arrangements.

Finally, as the above illustrates, whatever the impacts on local government, it is important to analyze and interpret each bit of data independent of the others. One cannot accurately say that college X has a positive or negative impact on community Y of Z dollars. There are too many variables to be considered. Giving a cumulative figure and not presenting a significant number of accompanying details is likened unto adding all the scores of a baseball team's record during a season in trying to present an accurate reflection of that team's season. It is grossly inadequate and more than probably inaccurate.

Impact on Local Individuals

The existence of a college and its accompanying operations also has a positive impact on the individuals or residents in a particular community. For example, Butler (1980) found that 361 full-time jobs and $6,270,889 in personal income were generated in the community due to the business volume of Thomas Nelson Community College. Similarly, Simpson (1976) found 690 jobs attributable to the presence of Elizabeth City State University (almost twice the 371 full-time faculty and staff positions) and $5,491,075 of personal income to local individuals from college-related jobs and business activities. Also, Mahon (1979) found that Bucks Community College had an impact on local employment of some 1,290 full-time jobs. Of this, 645 were full-time positions in the county created by local college-related business volume.

In addition to jobs and income, a third area of consideration when calculating impact on individuals is the amount of durable goods procurred with income from college-related jobs and business activities. Here we

are saying not only does the college's existence generate additional jobs and income in the community, but also this income allows the purchase of X amount of goods by these people,which allows a theoretical improvement in the standard of living. May and Hauck (1981) found that because of the existence of the University of Virginia, area residents were able to purchase some $16,160,000 in durable goods. This was in addition to the 22,882 jobs and the $230,854,000 in personal income due to the presence of the university. Breslin (1979) similarly found that Trenton State College generated durable goods purchases of $2.4 million due to the 20,000 jobs and $21 million in personal income the school was responsible for creating.

Again, each of these figureswas arrived at by applying multipliers or coefficients. For example, to get the total number of jobs attributable to the presence of the college, one has to add the number of faculty and staff positions to the number of jobs attributable to the college-related local expenditures and the operating costs of local governments and multiply this total by a coefficient. Caffrey and Isaacs recommended applying a coefficient (multiplier) of .00007 to .00009 to the total expenditures to give the number of jobs per dollar expenditure.

Finally, one must realize that an economic impact study is merely an attempt to quantify the effects of a given institution on the economy of a given area. It does not take into consideration perhaps the college's most outstanding impact on the community; the valuable human resources it provides. While society has rarely questioned the value of this function, it has often questioned the extent to which it will financially support these institutions. Economic impact studies attempt to

show that colleges are contributing significantly to the financial well being in the community and that they represent a positive financial investment for the community.

Chapter III

THE DATA AND THEIR TREATMENT

The Data

There were essentially two categories of data utilized in this research: primary data and secondary data. A brief description of each category is as follows.

The Primary Data

The primary data were those responses to the appended questionnaires and those data taken directly from internal, institutional records.

The Secondary Data

The secondary data were those taken from sources external to the institution such as the Virginia Departments of Taxation and Education reports, the Bureau of Labor Statistics, the local Chamber of Commerce, the U.S. Bureau of the Census, the county assesor's office and others.

The Criteria for the Admissibility of the Data

The data used in the study were only those data recommended for use in the American Council on Education model, "Estimating the Impact of a College or University on the Local Economy." In no case were additional data utilized. However, some collection of certain recommended data were deleted where those data were not applicable to the Liberty Baptist College. Also, only those data related to activities within the Lynchburg Metropolitan Area were used.

The Research Methodology

The method of research utilized in a study is generally dictated by the nature of the data (Leedy, 1980). Since the data in this study were accumulated primarily through observation, (even though some of the data were supplied by existing records), the descriptive or normative survey method was employed to process the data.

The methods and procedures used in this study were those designed for the American Council on Education by John Caffrey and Herbert Isaacs (1977). The models represent a series of linear cash-flow formulas that impose a structure on cash out-flow to identify who is spending, how much they are spending, what goods and services they are buying, and where the spending is done.

The data were gathered through the use of internal and external (business and government) records and a series of questionnaires sent to faculty, staff and students. The formulas were then applied to approximate the impact on local business, local government and local individuals. A more specific presentation of the research design with respect to each model is as follows:

Business:

Model B-1 College-related local business volume
Model B-2 Value of local property committed to college-related business
Model B-3 Expansion of the local banks' credit base resulting from college-related deposits
Model B-4 Local business volume unrealized because of the existence of college enterprises.

Government

Model G-1 College-related revenues received by the local government

Model G-2 Operating cost of local government-provided services and public schools allocable to college-related influences
Model G-3 Value of local government properties allocable to college-related portion of services provided
Model G-4 Real estate tax forgone due to college's tax exempt status

Individual

Model I-1 Number of jobs in the LMA attributable to the presence of the college
Model I-2 Personal income of individuals residing in the LMA from college-related jobs and business activities
Model I-3 Durable goods procurred with income from college-related jobs and business activities

While professional economists may be able to produce more sophisticated models (as evidenced by some of the models reviewed), those models also require much more sophistication in both application and interpretation. It was the researcher's desire to conduct a study which provided both accurate and understandable information for the school as well as the community. Given the limited financial resources of the Liberty Baptist College, combined with the fact that the researcher was not a professional economist, the Caffrey and Isaacs model recommended by the American Council on Education and adapted to meet Liberty Baptist College's needs was most appropriate for use. The methods and procedures were thoroughly tested at a consortium of six Claremont, California colleges to assure that applying them will reflect a reasonably credible approximation of reality. The method is considered sound and is a generally accepted way of measuring the economic impact of an institution on the local community. It provided a set of procedures to be followed in estimating institutional impacts on local business, local government, and local individuals. While it may be considered a somewhat lengthy method, it was still straight forward and more complex than a simple expenditure study. For example, while an

expenditure study would not have considered such negative impacts as business opportunities taken from the local community by the existence of the college or the cost of the local government in providing municipal and school services for families of college employees, the Caffrey and Isaacs model did consider these impacts. It must also be noted that the Caffrey and Isaacs method called for one area of impact on local government that was not included in this study. This was model G-5 (value of municipal-type services self-provided by the college). It was not included because those were provided to the college by the Old Time Gospel Hour. The value of such services in 1980-81 was $990,000.

Additionally, although the data, their sources, and the specific calculations of each model and submodel are presented in the section entitled, "Specific Treatment of the Data for Each Subproblem", some discussion of the questionnaires, their methods of distribution, and their response rates is appropriate.

In collecting the necessary data from the faculty, staff, and administration, and students, there were two separate questionnaires used. The faculty, staff, and administration questionnaire was explained and distributed at a combined faculty, staff, and administration meeting. From that distribution 70% or 250 of the total 356 faculty, staff, and administration responded. Likewise, the student questionnaire, which was distributed to the total student population through the Office of Student Affairs, was accompanied by verbal instructions. From that distribution 76% or 2,550 of the total 3,347 students responded.

Since the generally accepted response rates on questionnaires range from 65% to 90% of the population (Hillway, 1969; Razavieh, Jacobs and Ary,

1972; Tuckman, 1978; and others), the conclusions drawn for the total population based on the respective 70% and 76% response rates are considered sound (see Appendix C for explanation of questionnaire).

Finally, this procedure attempts to present a well-rounded view of the overall impacts imposed on the Lynchburg Metropolitan Area by Liberty Baptist College. Since the purpose of the study was to present an accurate reflection of Liberty Baptist College's impact on the Lynchburg Metropolitan Area economy, the researcher felt it important to the credibility of the report to include both the negative and positive impacts for which this method did provide.

Specific Treatment of the Data for Each Problem

Subproblem one. The first subproblem was to determine the economic impact Liberty Baptist College had on local business.

The Data Needed

In solving subproblem one there were four models that had to be calculated for 1980-81:

1. College-related local business volume or model B-1.
   B-1 + $24,297,643.
2. Value of local business property committed to college-related business or model B-2.
   B-2 = $13,413,529.
3. Expansion of the local banks' credit base from college-related deposits or model B-3.
   B-3 = $1,603,827.
4. Local business volume unrealized because of the existence of college enterprises or model B-4.
   B-4 = $706,459.

The data collected, their sources, the formulas applied, and the final calculations of the models were as follows:

Model	Description and Calculation	Data Source
B-1	College-Related Business Volume $BV_{CR} = ({}^{E}_{L})CR + ({}^{P}_{LB})CR + ({}^{BV}_{I})CR$ $= (13,884,368) + (2,082,655) + (8,330,620)$ $= 24,297,643$	
B-1.1	College-Related Local Expenditures $({}^{E}_{L})CR = ({}^{E}_{L})C + ({}^{E}_{L})F + ({}^{E}_{L})S + ({}^{E}_{L})V$ $= (5,589,106) + (3,514,565) + (4,298,819) + (481,878)$ $= 13,884,368$	
B-1.1.1	Local Expenditures by the College $({}^{E}_{L})C = ({}^{e}_{L})C\ ({}^{E}C - {}^{W}_{F,S} - {}^{XF}C - {}^{R}C)$ $= (.45)\ (18,784,952 - 5,902,694 - 97,578 - 364,443)$ $= 5,589,106$	
	$({}^{e}_{L})C$ = proportion of college expenditures that are local	College Accounting Office
	E_C = Total college expenditures	Liberty Baptist College Financial Statements, 1981-82
	$W_{F,S}$ = Gross compensation to faculty, staff and students	College Accounting Office
	XF_C = Mandatory transfers	Liberty Baptist College Financial Statements, 1981-82
	R_C = Taxes and other payments to government	College Accounting Office

Model	Description and Calculation	Data Source
B-1.1.2	Local Expenditure by Faculty and Staff $(EL)F = (EH)F + (^{E}_{NH})F + (^{E}_{L})NLF$ $= 253,900 + 3,081,433 + 179,232$ $= 3,514,565$	
B-1.1.2.1	Expenditures by Faculty and Staff for Local Rental Housing $(^{E}_{H})F = (fL)\ (FH)\ (^{DI}_{F})\ (^{e}_{H})$ $= (.94)\ (.26)\ (4,722,156)\ (.22)$ $= 253,900$	
	fL = proportion of faculty and staff residing locally	Faculty/Staff Survey
	FH = proportion of faculty and staff who rent housing	Faculty/Staff Survey
	DI_F = Total disposable income of faculty and staff	College Accounting Office
	e_H = Proportion of tenant's total expenditures likely to be spent for rental housing	Autumn 1980 Urban Family Budgets and Comparative Indexes for Selected Urban Areas, U.S. Department of Labor, Bureau of Labor Statistics, 1981
B-1.1.2.2	Local Nonhousing Expenditures by Local Faculty and Staff $(^{E}_{NH})F = (FL)\ (^{e}_{L})\ (^{DI}_{F})\ (^{e}_{NH})F$ $= (.94)\ (.89)\ (4,722,156)\ (.78)$ $= 3,081,433$	
	fL = Proportion of faculty and staff residing locally	Faculty/Staff Survey
	eL = Proportion of total nonhousing expenditures that an individual is likely to make in his local environment	Caffrey/Isaacs Gravity Model (Appendix D)

Model	Description and Calculation	Data Source
	$({}^{DI}F)$ = total disposable income of faculty and staff	College Accounting Office
	$({}^{e}NH)F$ = proportion of a consumer's total expenditures spent on nonhousing items	Autumn, 1980, Urban Family Budgets and Comparative Indexes for Selected Urban Areas, U.S. Dept. of Labor, Bureau of Labor Statistics, 1981
B-1.1.2.3	Local Expenditures by Nonlocal Faculty and Staff	
	$(EL)NLF = (1-fL)\ (F)\ ({}^{E}1)F$ $= (.06)\ (356)\ (8,391)$ $= 179,232$	
	f_L = proportion of faculty and staff residing locally	Faculty/Staff Survey
	F = total number of faculty and staff	College Personnel Office
	$({}^{E}1)F$ = estimated average local expenditures by each nonlocal faculty and staff person	Faculty/Staff Survey
B-1.1.3	Local Expenditures by Students	
	$({}^{E}L)S = ({}^{E}M)S + ({}^{E}H)S + ({}^{E}NH)S + ({}^{E}L)NLS$ $= (1,473,936) + (1,354,715) + (1,202,208) + (267,960)$ $= 4,298,819$	
B-1.1.3.1	Local Miscellaneous Expenditures Exclusive of Room and Board by Students Obtaining Local Room and Board in Group Arrangements or With Parents	
	$({}^{E}M)S = ({}^{S}L)\ ({}^{E}M)S\ ({}^{e}L)$ $= (2313)\ (716)\ (.89)$ $= 1,473,936$	

Model	Description and Calculation	Data Source
	S_L = number of students obtaining local room and board from dormitories or parents	Office of Student Affairs and Student Survey
	$(E_M)S$ = average miscellaneous expenditures, exclusive of room and board, per student of this type	Student Survey
	(e_L) = proportion of total expenditures, exclusive of room and board that a student is likely to make in his local environment	Caffrey and Isaacs (Appendix A)
B-1.1.3.2	Expenditures by Students for Local Rental Housing	
	$(E_H)S = (S_H)\ (E_h)S$	
	$= (729)\ (1858.32)$	
	$= 1{,}354{,}715$	
	S_H = number of students renting local housing	Student Survey
	$(E_h)S$ = average rental housing expenditures per student	Student Survey
B-1.1.3.3	Local Nonhousing Expenditures by Students Who Rent Local Housing	
	$(E_{NH})S = (S_H)\ (E_{nh})S\ (e_L)$	
	$= (729)\ (1874.00)\ (.88)$	
	$= 1{,}202{,}208$	
	S_H = number of students renting local housing	Student Survey
	$(E_{nh})S$ = average housing expenditures per student	Student Survey
	(e_L) = proportion of total nonhousing expenditures that an individual is likely to make in his local environment	Caffrey and Isaacs Gravity Model Index (Appendix D)

Model	Description and Calculation	Data Source
B-1.1.3.4	Local Expenditures by Non-Local Students	
	$(E_L)NLS = (S_{NL})\ (E_1)S$	
	$= (58)\ (4620)$	
	$= 267,960$	
	S_{NL} = number of non-local students	Student Survey
	$(E_1)S$ = estimated average local expenditures by each non-local student	Student Survey
B-1.1.4	Local Expenditures by Visitors to the College	
	$(E_L)V = (V_1)\ (E_1)V + \ldots + (V_n)(E_n)V$	
	$= 481,878$	
	(V_n) = estimated number of visits to the college by visitors in the nth category	
	$(E_n)V$ = estimated local expenditures by each visitor in the nth category during each visit to the college	

Explanation of $(E_L)V$

Group	Visits	Expenditures Per Visit	Total Expenditures	
Faculty	(4802)	$24	$115,248	Faculty Survey
Students	(6603)	$10	$66,030	Student Survey
Admissions	(715)	$40	$28,600	Admissions Department
Alumni	(500)	$40	$20,000	Alumni Survey
Athletics	(2500)	$20	$50,000	Athletic Department
Academic and Administrative Visits	(5050)	$40	$202,000	Administrative Offices

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Model	Description and Calculation	Source
B - 1.2	Purchases From Local Sources by Local Businesses in Support of their College-Related Business Ventures.	
	$({}^{P}_{LB})_{CR} = ({}^{m}_{p})\ ({}^{E}_{L})_{CR}$	
	$= (.15)\ (13,884,368)$	
	$= 2,082,655$	
	${}^{m}_{p}$ = coefficient representing the degree to which local businesses purchase goods and services from local sources.	Caffrey and Isaacs
	$({}^{E}_{L})_{CR}$ = college-related local expenditures	Model B - 1.1
B - 1.3	Local Business Volume Stimulated by the Expenditure of College-Related Income by Local Individuals Other than Faculty, Staff, or Students	
	$({}^{BV}_{I})_{CR} = ({}^{m}_{i})\ ({}^{E}_{L})_{CR}$	
	$= (.60)\ (13,884,368)$	
	$= 8,330,620$	
	${}^{m}_{i}$ = coefficient representing the degree to which individual income received from local business activity is spent and respent locally	Caffrey and Isaacs
	$({}^{E}_{L})_{CR}$ = college-related local expenditures	Model B - 1.1
B - 2	Value of Local Business Property Due to College-Related Business	
	$({}^{PB}_{B})_{CR} = ({}^{RP}_{B})_{CR} + ({}^{I}_{B})_{CR}$	
	$=(10,497,812)+ (2,915,717)$	
	$= 13,413,529$	

Model	Description and Calculation	Source
B - 2.1	Value of Local Business Real Property Committed to College-Related Business $(^{RP}_{B})_{CR} = (^{BV}_{CR})/(^{BV}_{L})\ (^{V}_{B})$ $= (24,297,643)/(1,271,957,400)$ $(549,623,674.00)$ $=10,497,812$	
	$(^{BV}_{CR})$ = college-related local business volume	Model B - 1
	$(^{BV}_{L})$ = local business volume	U.S. Bureau of the Census, Census of Business: Retail Trade Virginia (RC77-A-47), Wholesale Trade-Virginia (WC77-A-47), Services-Virginia (SC77-A-47); Taxable Sales in Virginia County and Cities, 1980, Virginia Department of Taxation
	$(^{V}_{B})$ = value of local business real property	U.S. Department of Commerce, Bureau of the Census, Census of Housing
B - 2.2	Value of Local Business Inventory Committed to College-Related Business $(^{I}_{B})_{CR} = (IBV)\ (^{BV}_{CR})$ $= (.12)\ (24,297,643)$ $= 2,915,717$	
	IBV = inventory-to-business volume ratio	Caffrey and Isaacs
	BV_{CR} = college-related local business volume	Model B - 1

Model	Description and Calculation	Source
B - 3	Expansion of Local Bank's Credit Base Due to College-Related Deposits	
	$CB = (1-t)[^{TD}C+(^{TD}F)(F)+(^{TD}S)(S)] + (1-d)X$ $[(^{DD}C+(^{DD}F)(F)+(^{DD}S)(S)+cbv(^{BV}CR))$ $= (1-.02)[(21,000+(732)(356)+(83)(3042)]+1-.1250)$ $[(171,165+(230.11)(356)+(27.18)(3042)+(.037)X$ $(24,297,643)]$ $= 1,603,827$	
	t = local time deposit (savings) reserve requirement	Local Bank (March 22)
	^{TD}C = average time deposit (savings) of the college in local banks	College Accounting Office
	^{TD}F = average time deposit of each faculty and staff person in local banks	Faculty/Staff Survey
	F = total number of local faculty and staff	College Personnel Office
	^{TD}S = average time deposit of each student in local banks	Student Survey
	S = total number of students residing locally	Registrar
	d = local demand deposit checking reserve requirement	Local Bank (March 22)
	^{DD}C = average demand-deposit (checking) of the college in local banks	College Accounting Office
	^{DD}F = average demand-deposit of each faculty and staff person in local banks	Faculty/Staff Survey
	^{DD}S = average demand-deposit of each student in local banks	Student Survey
	cbv = cash-to-business volume ratio	Caffrey and Isaacs
	^{BV}CR = college-related local business volume	Model B-1

Model	Description and Calculation	Source
B - 4	Local Business Volume Unrealized Because of The Existence of College Enterprises $({}^{BV}V)C = ({}^{I}BV)C$ $= 706,459.28$ $({}^{I}BV)C$ = income received by the college from operation of local and on-campus college-owned business enterprises	College Accounting Office

Subproblem two. The second subproblem was to determine the economic impact Liberty Baptist College had on local government.

The Data Needed

In solving subproblem two there were four models that had to be calculated for 1980-81:

1. College-related revenues received by the local government or model G-1.
   G-1 = $1,040,457

2. Operating cost of local government-provided municipal and public schools services allocable to college-related influences.
   G-2 = $1,489,710

3. Value of local government properties allocable to college-related portion of services provided.
   G-3 = $866,184

4. Real estate taxes foregone through the tax-exempt status of the college.
   G-4 = $71,000

The data collected, their sources, the formulas applied, and the final calculations of the above models were as follows:

Model	Description and Calculation	Source
G - 1	College-Related Revenues Received by Local Government $R_{CR} = ({}^{R}_{RE})CR + ({}^{R}_{NRE})CR + ({}^{R}_{A})CR + ({}^{R}_{Q})CR$ (191,688) + (115,520) + (129,287) + (168,712) + (435,250) = 1,040,457	
G - 1.1	College-Related Real Estate Taxes Paid To Local Governments $({}^{R}_{RE})CR = ({}^{R}_{RE})F + ({}^{R}_{RE,B})CR$ = (90,909) + (100,779) = 191,688	
G - 1.1.1	Real Estate Taxes Paid to Local Governments by Local Faculty and Staff $({}^{R}_{RE})F = (({}^{F}_{L})\ ({}^{1-f}_{H}))((Pt)\ ({}^{V}_{PR})$ = ((335)(1-.26))((.0096)(38,200)) = 90,009	
	F_L = number of faculty and staff residing locally	Faculty/Staff Survey
	fH = proportion of local faculty and staff who rent housing	Faculty/Staff Survey
	Pt = local property tax rate	Virginia Department of Taxation, Annual Report 1980-81
	V_{PR} = average value of local private residences	U.S. Department of Commerce Bureau of the Census: Census of Housing

Model	Description and Calculation	Source
G - 1.1.2	Real Estate Taxes Paid to Local Governments by Local Businesses for Real Property Allocable to College-Related Business	
	$({}^{R}_{RE,B})CR = (P)[({}^{BV}_{CR}/{}^{BV}_{L})\ (VB)]$ $(.0096)\ [(\$24,297,643/\$1,271,957,400)\ (\$549,623,674)$ $= \$100,799$	
	P_t = local property tax rate	Virginia Department of Taxation, Annual Report, 1980-81
	${}^{BV}_{CR}$ = college-related business volume	Model B-1
	${}^{BV}_{L}$ = local business volume	Model B-2.1
	${}^{V}_{B}$ = assessed valuation of local business real property	Model B-2.1
G - 1.2	College-Related Personal Property Taxes Paid to Local Government	
	$({}^{R}_{NRE})CR = ({}^{R}_{NRE,B})CR + ({}^{R}_{NRE})F$ $83,839 + 31,681$ $= 115,520$	
G - 1.2.1	Machinery and Tool Taxes and Public Service Corporation Taxes Paid to Local Government by Businesses for Assets Allocable to College-Related Business	
	$({}^{R}_{NRE,B})CR = ({}^{R}_{MP})[{}^{BV}_{CR})/{}^{BV}_{L})]$ $= (4,389,488)\ [(24,297,643)/1,271,957,400)]$ $= 83,839$	

Model	Description and Calculation	Source
	R_{MP} = machinery and tool taxes and public service corporation taxes paid to local government	Virginia Department of Taxation, Annual Report, 1980-81
	BV_{CR} = college-related business volume	Model B-1
	BV_L = local business volume	Model B-2.1
G-1.2.2	Nonreal Property Taxes Paid to Local Government by Local Faculty and Staff	
	$(R_{NRE})F = (FL)\ (R_{OP})/T_C)$ $= (335)\ (5,144,109.74/\ 54,394)$ $= 31,681$	
	F_L = number of faculty and staff residing locally	Faculty and Staff Survey
	R_{OP} = total personal property taxes paid to local governments	Virginia Department of Taxation, Annual Report, 1980-81
	T_C = total number of local households	U.S. Department of Commerce, Bureau of the Census
Model G-1.3	Sales Tax Revenue Received by Local Governments as a Result of College-Related Local Purchases	
	$(R_{ST})CR = (St_{LG})\ (ST)\ \left(\frac{BV_{CR}}{BV_L}\right)$ $= (.25)\ (27,075,857)\ \frac{(24,297,643)}{1,271,957,400}$ $= (129,287)$	
	St_{LG} = proportion of sales tax retained by local governments	Local Chamber of Commerce
	ST = total sales tax collected locally	Virginia Department of Taxation Annual Report 1980-81

Model	Description and Calculation	Source
	BV_{CR} = college-related local business volume	Model B-1
	BV_L = local business volume	Model B-2.1
Model G-1.4	State Aid to Local Governments Allocable to the Presence of the College $(^{R}A)CR = (^{RA}CH) + (^{RA})PC$ = 149,925 + 18,787 = 168,712	
Model G-1.4.1	State Aid to Local Public Schools Allocable to Children of College-Related Families $(^{R}A)CH = (^{A}PS)\,[(^{CH}PS)F + (^{CH}PS)S/^{CH}PS)$ = (28,948,683 [(163) + (23)/35,911] = $149,925	
	^{A}PS = total state aid to local public schools	Local School Boards
	$(CH_{PS})_F$ = number of faculty and staff children attending local public schools	Faculty/Staff Survey
	$(CH_{PS})S$ = number of students' children attending local public schools	Student Survey
	(^{CH}PS) = total number of children attending local public schools	Local School Boards

Model	Description and Calculation	Source
G - 1.4.2	Other State Aid Received by Local Governments Allocable to Presence of the College	
	$({}^{R}A)pc = [({}^{FH}_{L} + {}^{SH}_{L}) / ({}^{POP}_{LR})] ({}^{ABC})_{L}$	
	$= [(1338 = 4977 / (188,188)] (599,881)$	
	$= 18,787$	
	FH_L = number of persons in faculty and staff households residing locally	Faculty/Staff Survey
	SH_L = number of persons in student households residing locally	Student Survey
	POP_{LR} = local population	U.S. Department of Commerce, Bureau of Census
	ABC_L = local share of ABC profits	Virginia Aduitor of Public Accounts
G - 1.5	Other College-Related Revenues Collected by Local Governments	
	$({}^{R}Q)CR$ = 1. College-related auto registration fees	College Security Office
	2. User charges and tax revenues from utilities, sewers, sanitation paid by the college-related sources	Faculty/Staff/Student Survey College Accounting Office
	3. Local revenue sharing funds due to the presence of the college	Questionnaire/APCO
	$({}^{R}Q)CR = 15,885, + 331,840 + 87,525$	
	$({}^{R}Q)CR = 435,250$	
G - 2	Operating Cost of Government-Provided Municipal and Public School Services due to College-Related Influences	

Model	Description and Calculation	Source
G-2 Cont'd	$(^{OC}_{M,PS})CR = (^{OC}_{M})CR + (^{OC}_{PS})CR$ $= (1,124,956) + (364,754)$ $= 1,489,710$	
G - 2.1	Operating Cost of Government-Provided Municipal Services Allocable to College-Related Influences $(^{OC}_{M})CR = (((F+S)/(^{POP})_{LR}+(^{FH}_{L}+^{SH}_{L})/(^{POP})_{LR}/2)(^{B}_{M})$ $= (356+3100)/(188,188)+(1338+4977)/$ $(188,188)/2(43,334,213)$ $= 1,124,956$	
	F = number of faculty and staff	College Personnel Office
	S = number of students	Registrar Office
	FH_L = number of persons in faculty and staff households residing locally	Faculty/Staff Survey
	SH_L = number of persons in student households residing locally	Student Survey
	$(POP)_{LR}$ = local population	Model G - 1.4.2
	B_M = local government operating budgets for all municipal services except public schools	Local government
G - 2.2	Operating Cost of Local Public Schools Allocable to College-Related Persons $(^{OC}_{PS})CR = (((^{CH}_{PS})F+(^{CH}_{PS})S/^{CH}_{PS})(^{B}_{PS})$ $= (163) + (23)/35,911)(70,429,612)$ $= 364,754$	
	$(CH_{PS})F$ = number of faculty and staff children attending local public schools	Faculty/Staff Survey

Model	Description and Calculation	Source
G - 2.2 Cont'd	$({}^{CH}_{PS})S$ = number of students' children attending public schools	Student Survey
	${}^{CH}_{PS}$ = total number of children attending local public schools	Local School Boards
	${}^{B}_{PS}$ = local governments' operating budget for public schools	Local School Boards
G - 3	Value of Local School Property Allocable to College Related Portion of Services Provided	
	${}^{SP}_{CR} = [({}^{OC}_{PS})_{CR}/({}^{B}_{PS})]({}^{GP}_{PS})$	
	= (364,754)/(70,429,612)(167,281,725)	
	= 866,184	
	$({}^{OC}_{PS})_{CR}$ = operating cost of local public schools allocable to college-related persons	Model G - 2.2
	${}^{B}_{PS}$ = local governments operating budget for public schools	Local School Boards
	${}^{GP}_{PS}$ = value of all local government property associated with public schools	Virginia Department of Education, Division of Management Services
G - 4	Real Estate Tax Foregone Due to College's Tax Exempt Status	
	$({}^{RF}_{RE})_C$ = 71,000	Lynchburg Tax Assessor

Subproblem three. The third subproblem was to determine the economic impact Liberty Baptist College had on local individuals.

The Data Needed

In solving subproblem three there were three models that had to be calculated for 1980-81:

1. Number of local jobs attributable to the presence of the college.
   I-1 = 1586

2. Personal income of local individuals from college-related jobs and business activities.
   I-2 = $14,712,214

3. Durable goods procurred with income from college-related jobs and business activities.
   I-3 = $441,366

The data collected, their sources, the formulas applied, and the final calculations of the above models were as follows:

Model	Description and Calculation	Source
I -1	Number of Local Jobs Attributable to the Presence of the College	
	$J_L = F + (j)\ (({}^{E}L)CR = {}^{OC}M,PS)CR)$	
	$= 356+(.00008)(13,884,368 \div 1,489,710)$	
	$= 1586$	
	F = total number of faculty and staff	College Personnel Office
	j = full-time jobs per dollar of direct expenditures in the local environment	Caffrey and Isaacs
	$({}^{E}L)CR$ = college-related local expenditures	Model B - 1.1
	$({}^{OC}M,PS)CR$ = operating cost of local government provided services and public school services allocable to college-related influences	Model G - 2
I -2	Personal Income of Local Individuals from College-Related Jobs and Business Activities	
	$PI_{CR} = (({}^{f}L)\ ({}^{W}F,S)) + ((P)\ ({}^{E}L)CR)$	
	$= ((.94)(\$5,902,694))+((.66)(\$13,884,368)$	
	$= \$14,712,214$	
	f_L = proportion of faculty and staff residing locally	Faculty/Staff Survey
	$W_{F,S}$ = gross compensation to faculty and staff	College Accounting Office
	P = payrolls and profits per dollar of local direct expenditures	Caffrey and Isaacs
	$({}^{E}L)CR$ = college-related local expenditures	B - 1.1

Model	Description and Calculation	Source
I - 3	Durable Goods Procurred with Income from College-Related Jobs and Business Activities	
	$DG_{CR} = (i)(PI_{CR})$ $= (.03)\ ($14,712,214)$ $= $441,336$	
	i = proportion of total income typically used to purchase durable goods.	U.S. Department of Labor: Average Annual Expenditures for Commodity and Service Groups Classified by Nine Family Characteristics, 1972 and 1973 - Southern families
	PI_{CR} = personal income of local individuals from college-related jobs and businesses	Model I - 2

Chapter IV

SUMMARY AND CONCLUSIONS

The results from the study of the economic impact of Liberty Baptist College on the Lynchburg Metropolitan Area are summarized below and accompanied by conclusions. It must be emphasized that this study considered only those expenditures directly related to the college. It did not consider impacts of related ministries such as Lynchburg Christian Academy, which had 1400 students and 92 full time employees; the Old Time Gospel Hour, which had 532 full time employees; and the Thomas Road Baptist Church, which had 118 full time employees and approximately 18,000 members. In 1980-81 alone, the Old Time Gospel Hour expended $5.6 million in construction costs for educational buildings and college dormitories on the Liberty Baptist College campus, and most of those expenditures were local. If expenditures of related ministries related to the college business were considered in the study, the impacts would have been significantly increased.

Impact on Business

The models investigating impact on business in the Lynchburg Metropolitan Area examined four specific areas of impact. These were college related business volume (B-1), the value of local business property due to college-related business (B-2), the expansion of the local banks' credit base due to college-related deposits (B-3), and the local business volume unrealized because of the existence of college enterprises (B-4).

College-Related Local Business Volume (Model B-1)

In the 1980-81 fiscal year the college had a total impact on the Lynchburg Metropolitan Area business volume of $24,297,643. Model B-1 or college-related local business volume was the cumulative total of three submodels. These were models B-1.1, college-related local expenditures; B-1.2, purchases from local sources by local businesses in support of their college-related business ventures; and B-1.3, the local business volume stimulated by the expenditure of college-related income by local individuals other than faculty, staff or students.

College-Related Local Expenditures (Model B-1.1)

This was the dollar value of college-related direct local expenditures. In the 1980-81 fiscal year college-related local expenditures totalled $13,884,368. This included $5,589,106 in local expenditures by the college (Model B-1.1.1), $3,514,565 in local expenditures by faculty and staff (Model B-1.1.2), $4,298,819 in local expenditures by students (Model B-1.1.3), and $481,878 in local expenditures by visitors to the college (B-1.1.4).

It must also be noted that many of the faculty and staff members had outside business enterprises which produced income spent locally in addition to their Liberty Baptist College income. However, model B-1.1.2 considered only those local expenditures from Liberty Baptist College income. This reflects the generally conservative posture the researcher took in calculating specific impacts.

Likewise, the figures on visitors and their expenditures are conservative. None of the visitors (some 1500 to 2000) for any of the Admissions Department's three "College-For-A-Weekend" programs were included in the

totals because their meals and lodging were all provided on campus. Yet, it is safe to assume that those visitors had at least some local expenditures. Also, the alumni totals only included Homecoming visitors, and the athletic totals only included visiting teams. It would be equally safe to assume that alumni visited Liberty Baptist College other than Homecoming and that college athletic events drew spectators from outside the Lynchburg Metropolitan Area, with both groups having had some local expenditures.

Purchases From Local Sources by Local Business in Support of Their College-Related Business Ventures (Model B-1.2)

The direct expenditures of the college set off a series of indirect effects and second round expenditures, and ultimately the initial dollars spent by the college were respent many times. One of these second round expenditures is described in model B-1.2. In 1980-81 model B-1.2 was valued at $2,082,655. It was calculated by applying a coefficient representing the degree to which local businesses purchased goods and services from local sources (.15) to the college-related local expenditures ($13,884,368). The range of coefficients for this model as recommended by Caffrey and Isaacs was $.15 to $.30 per dollar. Choosing the coefficient in the low end of the range (.15) again illustrates the generally conservative approach to calculating these models.

Local Business Volume Stimulated by Expenditure of College-Related Income by Local Individuals Other Than Faculty, Staff, and Students (Model B-1.3)

This was a second indirect effect of the direct expenditures of the college. In the 1980-81 model B-1.3 totaled $8,330,620. It was calculated by applying a coefficient representing the proportion of income received from local college-related business activity that was spent and

respent locally (.60) to the college-related local expenditures ($13,884,368). The range of this coefficient as recommended by Caffrey and Isaacs was to $.60 to $.80 per dollar.

Value of Local Business Property (Model B-2)

For each dollar of sales, business enterprises must employ a certain amount of capital and property. Since a certain portion of those sales is due to college-related activities, it follows that a certain portion of capital and property must be committed to college-related business. In 1980-81 the value of such property (Model B-2) was $13,413,529. It was calculated by adding $10,497,812 which was the value of local business real property committed to college-related business (Model B-2.1) and $2,915,717, which was the value of local business inventory committed to college-related business (Model B-2.2).

Expansion of Local Banks' Credit Base (Model B-3)

Because of a variety of complexities in banking it is difficult to estimate exactly how much college-related deposits expanded the local credit base. Nevertheless, these deposits did make some additional funds available for lending in the local community. As noted by Caffrey and Isaacs, the formula recommended helps obtain a minimum estimate; the actual credit base expansion stimulated by college-related deposits may have been much higher. In 1980-81 the expansion of the local banks' credit base due to college-related deposits (Model B-3) was estimated to be $1,603,827.

Unrealized Local Business Volume (Model B-4)

The college operated business enterprises that were in some ways in competition with other similar local business enterprises. For example, while the college bookstore dealt primarily in special interest areas that other bookstores would not normally carry (textbooks, Liberty Baptist College souvenirs, etc), it is conceivable that local bookstores would begin to carry such items if the Liberty Baptist College bookstore did not exist. In 1980-81 the local business volume unrealized because of the existence of college enterprises (Model B-4) totaled $706,459.

Impact on Government

The second major area of the study was determining the college's impact on local government. The models used to investigate this impact examined four specific areas of impact. These were the college-related revenues received by local government (G-1), the operating cost of local government-provided municipal and public school services allocable to college-related influences (G-2), the value of local governments' properties allocable to college-related portion of services provided (G-3), and real estate taxes foregone through the tax-exempt status of the college (G-4).

Revenues Received by Local Government (Model G-1)

The college-related revenues received by local government in 1980 were estimated to be $1,040,457 (Model G-1) or college-related revenues received by local government was the cumulative total of five submodels. These were models G-1.1, college-related real estate taxes paid to local governments; G-1.2, college-related personal property taxes paid to local

government; G-1.3, sales tax revenue received by local government as a result of college-related local purchases; G-1.4 state aid to local governments allocable to the presence of the college; and G-1.5, other college-related revenues collected by local governments.

College-Related Real Estate Taxes (Model G-1.1)

In 1980 college-related real estate taxes paid to local governments totaled $191,688. This included $90,909 in real estate taxes paid to local governments by local faculty and staff (Model G-1.1.1) and $100,799 in real estate taxes paid to local governments by local businesses for real property allocable to college-related business (Model G-1.1.2).

It should be noted that real estate taxes paid to local government for properties rented by faculty, staff, and students were not included because reliable data on the average value of rental dwellings in the area was not available. However, some of the rent paid to local landlords by the faculty, staff, and students went to local governments to pay taxes on those dwellings. For example, assuming an arbitrary $19,000 average value for rental dwellings and given the .0096 average tax rates and the some 816 faculty, staff, and students renting local housing, the total of tax paid to local governments for properties rented by faculty, staff, and students amounts to $148,838. However, since reliable data were not available on the average value of rental properties, the revenues did not include this figure.

College-Related Personal Property Taxes (Model G-1.2)

College-related local personal property taxes paid to local governments totaled $115,520. This included $83,839 in machinery and tool taxes and public service corporation taxes paid to local government by business for

assets allocable to college-related business (Model G-1.2 1) and #31,681 in personal property taxes paid to local governments by local faculty and staff (Model G-1.2.2). Also, since these figures did not include personal property taxes which were paid to local governments by students, they would again be considered conservative estimates.

Sales Tax Revenues (Model G-1.3)

The sales tax revenues received by local governments as a result of college-related local business volume were calculated by multiplying the ratio of college-related local business volume to total local business volume (.0191) by the revenues from local sales tax collected ($6,768,964) or .25 of the total sales tax collected locally. Model G-1.3 totaled $129,287.

State Aid to Local Government (Model G-1.4)

State aid to local governments allocable to the presence of the college totaled $168,712. This included $149,925 in state aid to local public schools allocable to children of college-related families (Model G-1.4.1) and $18,787 in other state aid received by local governments allocable to the presence of the college. Model G-1.4.1 was lower than one would expect because many of the children of Liberty Baptist College faculty, staff and students attend Lynchburg Christian Academy.

Other College-Related Revenues (Model G-1.5)

Other college-related revenues collected by local governments totaled $435,250. This was the total of the college-related local auto registration fees of $15,885, college-related user charges and tax revenues from utilities, sewers and sanitation of $331,840 and federal revenue sharing funds of $87,525.

Cost of Government-Provided Services (Model G-2)

The operating cost of local government-provided municipal and public school services allocable to college-related influences was estimated to be $1,489,710. Model G-2 or the above stated cost was calculated by adding $1,124,956 in operating costs of government-provided municipal services allocable to college-related influences (Model G-2.1) and $364,754 in operating costs of local public schools allocable to college-related persons (model G-2.2).

Value of Local School Property (Model G-3)

The value of local school property allocable to the college-related portion of services provided totaled $866,184. This was calculated by multiplying the ratio of the operating cost of local public schools allocable to college-related persons ($364,754) to the local governments' operating budget for public schools ($70,429,612), by the total value of all local public school property or (.005178)X($167,281,725).

Real-Estate Tax Foregone (Model G-4)

The real estate tax foregone due to the college's tax-exempt status was $71,000. This figure was available through the Lynchburg tax assessor's office.

Impact on Individuals

The third major area of the study was determining the college's impact on local individuals. The models used to investigate this impact examined four specific areas of impact. These were the number of jobs attributable to the presence of the college (I-1), the personal income of local

individuals from college-related jobs and business activities (I-2), and the durable goods procurred with income from college-related jobs and business activities (I-3).

Local Jobs Attributable to the College (Model I-1)

Many of the individuals in the Lynchburg Metropolitan Area were likewise affected by the presence of Liberty Baptist College. One way in which they were affected was that 1586 jobs were attributable to college-related local expenditures. This was calculated by adding college-related local expenditures of $13,884,368 and the operating cost of local government provided municipal and public school services allocable to college-related influences of $1,489,710. Then a coefficient of .00008, as recommended by Caffrey and Isaacs and representing the number of full time jobs per dollar of direct expenditures in the local environment, was applied to the total local expenditures associated with the college of $13,884,368. This was finally added (1230) to the total number of faculty and staff of 356 to produce the 1586 total.

Personal Income of Local Individuals (Model I-2)

The personal income of local individuals from college-related jobs and business activities totaled $14,712,214. It was calculated by adding the income of faculty and staff residing locally ($5,548,532) and the income produced by college-related local expenditures ($9,163,682). The latter figure was achieved by applying a coefficient of .66 to college-related local expenditures of $13,884,368. The coefficient recommended by Caffrey and Isaacs represents payrolls and profits per dollar of local direct expenditures.

Durable Good Procurred With College-Related Income (Model I-3)

Durable goods procurred with income from college-related jobs and business activities totaled $441,336. It was calculated by applying a coefficient (.03) representing the proportion of total income typically used to purchase durable goods to the personal income of local individuals from college-related activities.

In conclusion, through this study the researcher has attempted to accomplish what Cook (1970) has suggested: expressing the contributions of the college to the community more clearly in some common denominator. The common denominator in this case has been the economy of the Lynchburg Metropolitan Area. While these contributions do not represent the only ones made to the Lynchburg Metropolitan Area by the college, it is obvious that Liberty Baptist College has had a significant impact on the Lynchburg Metropolitan Area economy, as illustrated through the business and individual models. Liberty Baptist College accounted for over $24 million of the Lynchburg Metropolitan Area business volume as the direct expenditures of over $13.8 million by the college, faculty, staff, and students resulted in additional indirect expenditures of over $10.3 million. Likewise, over 1580 jobs and $14.7 million in personal income in the Lynchburg Metropolitan Area were due to the presence of Liberty Baptist College. Stated differently, for every 100 students at Liberty Baptist College, 47 jobs and $440,000 in personal income were created. Also, considering the generally conservative approach used in calculating these models, there is evidence indicating that the acutal impacts may have been even greater.

However, as was illustrated through the government models, it is also

clear that Liberty Baptist College received benefits from being located in the Lynchburg Metropolitan Area, which is why the study should be evaluated on the basis of all of the findings rather than on isolated segments.

Yet, it must be re-emphasized that the study fell short in that it only investigated economic contributions. While these contributions were significant, they do not represent the most important ones. The most important impact Liberty Baptist College or any other college has on its community is that of the human resources it provides. As was previously mentioned, while society has rarely questioned the value of this function of colleges (providing human resources), it has often questioned the extent to which it will financially support these institutions.

Thus, one of the purposes of conducting such a study is an attempt to show that colleges also contribute to the financial well-being of the community and therefore represent a sound financial investment for that community. Based on the findings of this study it can be concluded that Liberty Baptist College contributes significantly to the financial well-being of the Lynchburg Metropolitan Area.

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APPENDIX A

FACULTY & STAFF QUESTIONNAIRE

APPENDIX A
Faculty, Staff and
Administration Questionnaire

ECONOMIC IMPACT STUDY OF LIBERTY BAPTIST COLLEGE
ON THE LYNCHBURG METROPOLITAN AREA

Note: This questionnaire is confidential and the results will be used in collective form.

DIRECTIONS: Please answer each question by checking either the appropriate box or, when applicable, putting a numerical answer in the space provided.

1. What is your employment status?

[ ] Faculty

[ ] Staff

[ ] Administration

2. What is your marital status?

[ ] Single, widowed, divorced, separated

[ ] Married

3. What is your sex?

[ ] Male

[ ] Female

4. How many persons are there in your household?

[ ] TOTAL NUMBER

[ ] How many children are 18 or under?

[ ] How many of those children attend public schools?

5. Where is your residence?

[ ] On Campus

[ ] In the Lynchburg Metropolitan Area
(Lynchburg city, Amherst, Campbell, Bedford or Appommatox County)

[ ] Outside the Lynchburg Metropolitan Area

6. In what type of housing do you reside?

☐ On Campus

☐ Rent

☐ Own home or condominium

☐ Other _____

7. What is your annual income (1981 calendar year)?

_____a. Total gross income (before payroll deductions) of all persons in household

_____b. Total L.B.C. income (if not the same as item a) before payroll deductions

_____c. Total L.B.C. income after payroll deductions

8. Please estimate your average monthly expenditures in the Lynchburg Metropolitan Area in the following categories:

_____a. Housing expense (i.e., rent, insurance, utilities, taxes)

_____b. Food expense.

_____c. All other expenses (i.e., installments, entertainment, health care, transportation, clothing, schooling)

_____d. Total expense (a+b+c)

9. What are your average balances in the following areas?

_____Local bank checking accounts

_____Local bank savings accounts

_____Local savings and loan savings accounts

_____Local savings and loan checking accounts

10. What were your annual real estate taxes for the 1981 calendar year?

_____

11. How many people from outside the Lynchburg Metropolitan Area visited you in 1981? (If someone visited more than once, count each visit as a separate person. For example, if your parents visited twice it counts as four people).

_____Number of visitors

_____Average daily expenditures of each visitor (estimate)

_____Average stay (in days) of each visitor

APPENDIX B

STUDENT QUESTIONNAIRE

Appendix B
Student Questionnaire

ECONOMIC IMPACT STUDY OF LIBERTY BAPTIST COLLEGE
ON THE LYNCHBURG AREA

Note: The first-year students may have to estimate the amount of expenditures while the returning students should be able to list fairly accurate amounts for the specific costs requested. Thank you for your help.

1. What is your college status?

[ ] Freshman
[ ] Sophomore
[ ] Junior
[ ] Senior
[ ] Graduate

2. What is your sex?

[ ] Male
[ ] Female

3. What is your marital status?

[ ] Single
[ ] Married
[ ] Widowed, divorced, or separated

4. Persons in Household

a. How many people are in your household (do not include family if living at home)?_____

b. How many people in your household are employed by the college? _____

5. Is your usual residence while attending LBC

[ ] In the Lynchburg Metropolitan Area (Lynchburg City, Amherst, Campbell, Bedford, or Appomattox County)

[ ] Outside the Lynchburg Metropolitan Area

6. If you commute to school, approximately how many miles per day? _____

7. In what kind of housing do you reside?

[ ] College dorm
[ ] Own home
[ ] Other
[ ] Rented facility (apartment, room or house)
[ ] With parents

8. What are your annual taxes?

_____ a. Real Estate

_____ b. Other property (automobile, etc.)

9. Please estimate your average monthly expenditures in the Lynchburg Metropolitan Area for goods and services acquired on and off campus.

	On Campus	Off Campus
Housing	_____	_____
Food	_____	_____
All other	_____	_____

(Include books, supplies, clothes, transportation, entertainment, laundry, installment credit, i.e. Penneys - but not tuition and fees).

(See chart to estimate expenditures).

10. What is your average balance in Lynchburg Area financial institutions?

_____ Bank Checking Accounts

_____ Bank Savings Accounts

_____ Savings and Loan Accounts

11. How often do you receive visitors from out of the city in a year? _____

12. How many visitors? _____ How many days do they usually stay? _____

Average Monthly Expenditures

OFF CAMPUS	LOW	MED	HIGH	ON CAMPUS	LOW	MED	HIGH
Gas	$ 25	$ 45	$ 65	Transportation	$ 5	$10	$15
Electric	$ 20	$ 50	$ 90	Food on-campus	$ 5	$10	$15
Heat/A.C.	$ 50	$ 80	$110	Food dine-out	$ 5	$10	$15
Water	$ 5	$ 10	$ 15	Groceries	$ 5	$10	$15
Phone	$ 20	$ 40	$ 60	Entertainment	$ 8	$15	$22
Groceries	$120	$160	$200	Laundry/Clean	$ 8	$12	$16
Dining Out	$ 20	$ 50	$ 80	Clothing	$ 5	$15	$20
Transportation	$ 85	$125	$165	Supplies	$ 9	$12	$15
Health Insurance	$ 25	$ 90	$120	Books	$15	$30	$45
Car & Home Insur.	$ 25	$ 45	$ 65	Miscellaneous	$ 5	$10	$15
Credit-Install.	$ 20	$ 50	$ 80				
Clothing	$ 15	$ 45	$ 75				
Supplies	$15	$ 45	$ 75				
Miscellaneous	$ 10	$ 40	$ 70				
TOTALS	$490	$875	$1260	TOTALS	$70	$134	$193

APPENDIX C

QUESTIONNAIRE ANALYSES

Faculty, Staff, Administration Questionnaire Analysis

Total Responses - 250

Description	Variable	Quantity	Percentage
Employment Status	Faculty	128	51%
	Staff	99	40%
	Administration	23	9%
Marital Status	Single	43	17%
	Married	207	83%
Sex	Male	151	60%
	Female	99	40%
Place of Residence	Inside LMA	235	94%
	Outside LMA	15	6%
Types of Housing	Rent	65	26%
	Own Home	185	74%
		Yearly Average	Monthly Average
Expenditures	Housing	5388	449
	Food	3576	298
	Other	6204	517
		Total	Average
Account Balances	Checking	---	230.11
	Savings	---	732
Real Estate Taxes	---	90,909	255

		Total	Average
Visitors	Number	3372	13.49
	Expenditures	80,972	24.00
Persons in Household	Total	940	3.76
	Under 18	285	1.14
	Public Schools	115	.46

Student Questionnaire Analysis

Total Responses - 2550

Description	Variable	Quanity	Average
College Status	Freshman	1156	45%
	Sophomore	613	24%
	Junior	401	16%
	Senior	380	15%
Marital Status	Single	2419	95%
	Married	125	5%
	Widowed/ Divorced	6	-
Sex	Male	1123	44%
	Female	1427	56%
Persons in Household	---	4084	1.6%
Residence	Inside LMA	2502	98%
	Outside LMA	48	2%
Visitors	Visitor	5443	2.13%
	Expenditures	$54,430($10 average)	
Expenditures		Yearly Average	Monthly Average
	Housing	1974	$156.00
	Food	1246	$103.85
	Other	1649	$137.42
Account Balance	Checking	---	$ 27.18
	Savings	---	$ 83.00

APPENDIX D

THE GRAVITY MODEL

THE PROPORTION OF TOTAL NONHOUSING EXPENDITURES THAT AN INDIVIDUAL IS LIKELY TO MAKE IN HIS LOCAL ENVIRONMENT

As explained by Caffrey and Isaacs, e_L represents the proportion of total nonhousing expenditures that an individual is likely to make in his local environment. It assumes the gravity theory, which states that the amount of money spent on nonhousing expenditures is inversely proportional to the square of the distance to the point of purchase. The formula is as follows:

$$e_L = \frac{\frac{RS_L}{D_L^2}}{\frac{RS_L}{D_L^2} + \frac{RS_{N1}}{D_{N1}^2} + \frac{RS_{N2}}{D_{N2}^2} + \frac{RS_{Nn}}{D_{Nn}^2}}$$

RS_L = total retail sales in the local environment

D_L = average distance or travel time for a local individual to make a purchase within his local environment.

RS_{Nn} = total period retail sales in the nth competing neighboring community.

D_{Nn} = average distance or travel time for the local individual to make a purchase in the nth competing neighboring community.

The retail sales for the Lynchburg Metropolitan Area and several neighboring communities as well as the average distances were as follows:

	Sales (in millions)	Average Distance
Lynchburg Metropolitan Area	*604	7.5
Charlottesville/Albermarle Area	422	65
Roanoke Area	1070	55
Richmond Area	2927	110
Washington D.C.	15276	175
Bedford County	36	20

*604 million in retail sales includes Beford County Sales

$$e_L = \frac{\frac{604}{7.5^2}}{\frac{604}{7.5^2} + \frac{426}{65^2} + \frac{2,927}{110^2} + \frac{170}{55^2} + \frac{15,276}{175^2} + \frac{36}{20^2}}$$

$$e_L = \frac{10.73}{10.73 + 0.10 + 0.24 + 0.35 + 0.49 + 0.09}$$

$$e_L = \frac{10.73}{12.00}$$

$$e_L = .89$$